

WHAT IS CLAIMED IS:

1. A system for flexing a web comprising:
a web handling apparatus including a first web handling assembly and a second
5 web handling assembly and a gap therebetween;
a web passing through a web path, the web path including;
a first portion along the first web handling assembly, a second portion in
the gap and a third portion along the second web handling assembly, wherein the
second portion includes a radiused segment including a radius; and
10 means for controlling the radius of the radiused segment.
2. The system of claim 1, wherein the first web handling assembly is a first roll
assembly and the second web handling assembly is a second roll assembly.
- 15 3. The system of claim 1, wherein the first web handling assembly is a first belt
assembly and the second web handling assembly is a second belt assembly.
4. The system of claim 1, wherein the means for controlling the radius comprises:
a sensor for sensing the position of the web in the gap, wherein the sensor is
20 coupled to a controller that controls the relative speed of the first and second web handling
assemblies.
5. The system of claim 1, further including a rotating member surrounded by the
radiused segment.
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6. The system of claim 1, further including means for holding the web against the
first and second portions of the web path.
7. The system of claim 6, where in the means for holding is selected from the group
30 consisting of a mechanical engagement means, air pressure means, electrostatic pinning
means, adhesive means and vacuum means.

8. The system of claim 7, wherein the mechanical engagement means is a hook and loop assembly.

9. The system of claim 1, wherein the means for controlling includes a sensor coupled to a controller, wherein the sensor sends a signal to the controller, the signal being proportional to the error in the position of the web in the gap.

10. A system for imparting a controlled strain to an indeterminate length web comprising:

a pair of co-rotating members with a gap therebetween;
means for forming a radius on the web when the web is in the gap between the co-rotating members.

11. The system of claim 10, wherein the pair of co-rotating members are roller assemblies.

12. The system of claim 10, wherein the pair of co-rotating members are belt assemblies.

13. The system of claim 10, wherein the means for forming the radius comprises:
means for controlling the speed of the co-rotating members relative to one another;
and
means for sensing the web while the web is in the gap, wherein the means for sensing is electronically coupled to the means for controlling.

14. The system of claim 13, wherein one of the co-rotating members is a pacing roll and the other co-rotating member is a follower roll.

15. The system of claim 13, wherein the means for sensing the web is an optical sensor.

16. A method of inducing a plastic deformation in a web comprising:

creating a web path including a first portion, a second portion, and a third portion,
wherein the first portion passes along a first rotating member, the second
portion includes a radiused section having an effective radius and the third portion
passes over a second rotating member and further wherein the first and second
members are co-rotating members;
passing the web through the web path;
inducing a plastic strain in the web when the web is passed through the radiused
section.

10 17. The method of claim 16, wherein creating the web path further includes creating
the first portion passing along a first roller and creating the second portion passing along a
second roller.

15 18. The method of claim 16, wherein creating the web path further includes creating
the first portion passing along a first belt assembly and creating the second portion passing
along a second belt assembly.

20 19. The method of claim 16, further including:
varying the radius of the web as it passes through the second portion of the web
path.

20. The method of claim 19, wherein said inducing a plastic strain includes inducing a
plastic strain that varies as a function of the web in the machine direction.

25 21. A system for inducing a strain in a web comprising:
a machine having a web path:
means for inducing a plastic strain in the web, wherein the means does not make
contact with one surface of the web.

30 22. The system of claim 21, wherein the means for inducing a plastic strain includes a
pair of co-rotating members with a gap therebetween.

23. The system of claim 22, wherein the co-rotating members are selected from the group consisting of rollers and belts.